DOCUMENT RESUME

ED 260 700 IR 011 777

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TITLE Instructional Technology: Demonstration of Original Software for Teaching Introductory Psychology.
SPONS AGENCY Department of Education, Washington, DC.
PUB DATE Aug 85
GRANT G008202189
NOTE 7p.; Paper presented at the Annual Convention of the American Psychological Association (Los Angeles, CA, August 1985).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; *Computer Simulation; Courseware; Higher Education; Learning Strategies; *Microcomputers; *Psychology; *Teaching Methods

ABSTRACT

This paper describes a demonstration of an instructional package consisting of original, interactive microcomputer-based simulations and accompanying faculty and student guides designed to assist in teaching introductory psychology. An Apple IIe computer and color monitor were used. The paper contains: (1) a purpose statement; (2) a brief summary of available software in the field of psychology, including titles and authors; (3) a description of the New York Institute of Technology's (NYIT) Psychology Software Development Project; and (4) a list of NYIT's individual psychology software programs. Each listing contains the program title, a brief content summary, and the student interaction involved. The programs are: Operant Conditioning; Incremental Learning--A Self-Experiment; Classical Conditioning; Digit-Span; and Prisoner's Dilemma. Also included is a summary of the implementation procedures for utilizing these software programs as value-added exercises at NYIT. The concluding section promises a more formal evaluation study focusing on process and outcome data after a full-scale course implementation of the interactive software programs is initiated. (JB)

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Instructional Technology: Demonstration of Original Software for Teaching Introductory Psychology*

by

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Summary of paper submitted to the Program Committee, Division 2 (Teaching of Psychology), American Psychological Association Annual Convention, August, 1985, Los Angeles

* This study was supported by a grant, Technology Based Education, #G008202189, from the U.S. Department of Education to New York Institute of Technology.

IR011447

Instructional Technology:
Demonstration of Original Software
for Teaching Introductory Psychology

Abstract

In this paper we will demonstrate original, interactive microcomputer software for introductory psychology, with our own Apple IIe computer and projection system. This format will allow hands-on experience for interested colleagues, thereby enhancing the resource value of the session. The instructional package includes software programs on various topics in introductory psychology accompanied by print support materials. Students interact with the programs in the role of subject and/or experimenter. Psychological concepts are reinforced through interactive simulations and tutorials. Discussion will focus on in-class implementation procedures; goals and objectives of the software programs and support materials; and the impact on the larger educational delivery system.

Instructional Technology:
Demonstration of Original Software
for Teaching Introductory Psychology

The purpose of this paper is to highlight a major teaching innovation applied to psychology--the use of original, interactive microcomputer based simulations. An instructional package consisting of psychology software programs and accompanying faculty and student guides will be demonstrated to enhance the resource value of the session. We will provide an Apple IIe microcomputer & color monitor to permit hands on experience for interested conference participants. Several different software programs, developed for introductory psychology will be available for review and critique. Issues relevant to in-class implementation of computer enhanced learning will be discussed.

To date must software for the teaching of psychology has been geared to advanced courses (e.g., Laboratory in Cognition & Perception, Levy, et al., 1979; Nature of Attitudes, Elliot, et al., 1983; Topics in Research Methods, Fazia & Bachler, 1984. The existing software for teaching introductory psychology, (e.g., Eamon, 1982; and Hartley, 1982) are promising instructional aids, but are not comprehensive or systematic. Futhermore, they lack the developmental resources required to produce professional quality software packages for widespread dissemination and adoption.

The software to be presented in the session builds on their early work and is congruent with many suggestions appearing in the general technology education literature. Specifically, our work exemplifies some of the suggestions for applying computers to the teaching of psychology called for by Collyer (1984) in his recent paper -- namely, "emphasizing the computer as an object-to-think-with rather than simply as an object-that-thinks" (p.206).

In our instructional materials, the computer supplements and enhances standard text material in several important ways. All programs convey information to the student in multimodal sensory chanels, i.e., combining color, graphics, text, and animation. Further, the programs are highly interactive requiring intelligent student reponses in order to move through the various components to complete the programs. The programs are presented in several different formats, e.g., simulations and tutorials, depending on the phenomenon or concept to be learned. The comprehensive educational package, with faculty and student guides, has a number of pedagogical goals. It aims to make complex concepts more concrete and manageable for the students. The hands-on approach gives students an awareness of the process involved in analyzing data and making inferences. And perhaps, most importantly, teaching students to use simulations and manipulate symbols gives faculty powerful new instructional strategies.

The New York Institute Of Technology Psychology Software Development Project

The New York Institute Of Technology (NYIT), a four year, private, institution with campuses in New York City, Nassau and Suffolk counties, is the recipient of a multi-year grant, Technology-Based-Education, from the U.S. Department of Education. The purpose of the grant is to develop and implement educational software for various undergraduate desciplines--particularly Math, English and Psychology.

In Math the focus is on an innovative use of the Logo programming language for problem solving. In English the focus is on the use of word processing software to facilitate the learning of writing. For Psychology, simulations of classic experiments and basic psychological principles have been developed. Software development teams comprised of faculty content experts, coursewriter, graphics artists, and programmers have participated in the development of original NYIT software. To support the application of educational software into the mainstream of the college curriculum, NYIT has established several micro-computer learning centers.

Description of the Psychology Software Programs

A series of stand-alone programs have been developed to accompany a standard introductory psychology textbook. The programs are:

- highly interactive;
- make full use of color and graphics;
- contain animated sequences;
- are coordinated with the text;
- teach to clear educational objectives;
- include faculty resource guides;
- have complementary student guides containing laboratory worksheets.

The following are brief summaries of the individual psychology programs to be demonstrared and discussed in this poster session. All programs run on Apple II series.

1. Operant Conditioning. This program simulates a Skinner Box environment, with a realistic looking pigeon and accurate cummulative plotter, and demonstrates the effect of different schedules of reinforcement on behavior. For Phase II, the program is reversed and the student controls the pigeon's movements while performing discrimination tasks.
2. Incremental Learning: A Self-Experiment. The student serves as subject in an experiment and his/her data are tabulated, graphed and compared to normative data. Incremental learning is demonstrated in a realistic manner. The student participates in data collection and observes its transformation from raw data to graphic modes.
3. Classical Conditioning. This is a tutorial program with nested simulations. It teaches the basic material of classical conditioning through the presentation of icons, color graphs, animation, symbolic representations and

simple clear text. The student must complete several simulations to move from concept to concept. Acquisition, extinction, spontaneous recovery, generalization and discrimination is covered.

4. Digit-Span. This program is designed to help the student to discover the importance of chunking in short-term memory; chunking is compared to non-chunking conditions; results are compared on color graphs.
5. Prisoner's Dilemma. This program demonstrates the consequnces of decision strategies involving trust vs. suspicion, cooperation vs. competition in a zero sum game situation. Students play against the computer, which is programmed to adopt complex, e.g. human-like strategies. The outcome matrix determines the total score for each player. Analysis of the results indicate the decision strategy adopted by the students, i.e., whether or not they tried to maximize their own score or to compete against the computer. Analysis will indicate if they adopted a trusting or suspicious, cooperative or competitive strategy.

Inplementation Procedures

The software was incorporated into several introductory psychology sections at NYIT as value-added exercises to the course. Students spent approximately 8-10 hours in the learning centers working with the microcomputer software programs. The course professor provided the context for the use of each particular program. Depending on the program students interacted with the computer in the role of subject and/or experimenter; other programs reinforced psychological concepts through interactive simulations and tutorials. To integrate the software programs with the course contents (lecture and text material) and educational objectives, substantive print support materials were developed. A faculty resource guide for each prgram contains information on computer use, learning objectives, discussion questions, and guidelines for evaluating student responses. Likewise a student guide for each program contains laboratory worksheets for recording and analyzing data, working with different graphic representations, and making inferences from the data. In addition, questions probe generalization and discrimination of the concepts demonstrated in the programs.

Conclusion

Our purpose in this poster session is to demonstrate innovative, educational psychology packages and to suggest their utility for generating instructional strategies. These packages include original software programs and accompanying print support materials. In the course of our demonstration, the discussion with colleagues will focus on in-class implementation procedures. Intial faculty and student responses to this mode of instruction have been very favorable. A more formal evaluation study focussing on process and outcome data, will be conducted following a full-scale course implementation. This evaluation strategy is parallel to that undertaken for the NYIT Computer Based Education Grant (Jeger, Slotnick, Thoms, Kohn, and Peng, 1984).

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